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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,760	04/02/2004	Michiko Endo	1614.1168C	9967

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STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER	
ANYASO, UCHENDU O	

ART UNIT	PAPER NUMBER
2675	

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/815,760	ENDO, MICHIKO	
	Examiner	Art Unit	
	Uchendu O Anyaso	2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/865,707.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/2/04*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1. **Claims 1-22** are pending in this action.

Claim Rejections - 35 USC ' 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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3. **Claim 10** is rejected under 35 U.S.C. 102(b) as being anticipated by *Houston* (U.S. Patent 4,853,630).

Regarding **independent claims 10,** Houston teaches an invention that relates to position sensors and more particularly to magnetic tactile sensors used in pointing devices for computer workstations (column 1, lines 5-10).

Furthermore, Houston teaches a first magnet 21 and a second magnet 22, and a plurality of magnetoelectric hall effect sensors (35-38) wherein the center axis of the first magnet 21 coincides with the center axis of the second magnet 22 (see figure 7 at 21 & 22).

Furthermore, Houston teaches how magnets (21, 22) are disposed having identical poles opposite each other (figure 1-8, at 21, 22, 30, 35-38).

Also, Houston teaches how a magnet would be tiltable with respect to another magnet by teaching how the device can be used as a tactile sensor in a mechanical arm or wrist wherein the sensor is connected to an output shaft such that the pressure exerted by the surface contacted by

the shaft is recorded via the lower sensor 39 of FIG. 7 and the direction of the pressure exerting force is determined by the changes in the magnetic flux caused by the tilt of magnet 21 as detected by sensors 35-38 (column 8, lines 51-59, figure 7 at 21, 35-39).

Furthermore, Houston teaches how the four hall effect sensors (35-38) are mounted on the frame opposite the second magnet 22 (figure 7, 8 at 35-38, column 7, lines 29-41) and output voltage values that vary according to a change in a gap between the hall effect sensors (35-38) and the magnet such that the voltage values indicate a set of X, Y coordinates in a two dimensional space (*see* figures 11a-11c, 12, 14 at 66-69; column 9, line 15 through column 10, line 66).

Claim Rejections - 35 USC ' 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1-9** and **11-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over *Houston* (U.S. Patent 4,853,630).

Regarding **independent claims 1, 4** and **7,** Houston teaches an invention that relates to position sensors and more particularly to magnetic tactile sensors used in pointing devices for computer workstations (column 1, lines 5-10) in a three dimensional environment (column 7, lines 20-23).

Furthermore, Houston teaches a first magnet 21 and an second magnet 22, and a plurality of magnetoelectric hall effect sensors (35-38) disposed in a plane transverse to the common axes of the first magnet 21 and second magnet 22 wherein the center axis of the first magnet 21 coincides with the center axis of the second magnet 22 (see figure 7 at 21 & 22). The embodiment shown in figure 9 teaches a cylindrical magnet 48 having a center axis, and an annular magnet 49 having a center axis in common with the center axis of the cylindrical magnet 21 wherein the inner circumference of magnet 49 is larger than the outer circumference of the cylindrical magnet 48 (see figure 9 at 48, 49).

Thus, it would have been obvious to a person of ordinary skill in the art to modify the shapes of the magnets (21, 22) in order to be cylindrical or annular. The motivation for adjusting the shape would have been to facilitate improved ergonomic characteristics in a magnetic tactile sensor (column 4, lines 19-23).

Furthermore, Houston teaches how magnets (21, 22) are disposed having identical poles opposite each other (figure 1-8, at 21, 22, 30, 35-38).

Also, Houston teaches how a magnet would be tiltable with respect to another magnet by teaching how the device can be used as a tactile sensor in a mechanical arm or wrist wherein the sensor is connected to an output shaft such that the pressure exerted by the surface contacted by the shaft is recorded via the lower sensor 39 of FIG. 7 and the direction of the pressure exerting force is determined by the changes in the magnetic flux caused by the tilt of magnet 21 as detected by sensors 35-38 (column 8, lines 51-59, figure 7 at 21, 35-39).

Furthermore, Houston teaches how the four hall effect sensors (35-38) are mounted on the frame opposite the second magnet 22 (figure 7, 8 at 35-38, column 7, lines 29-41) and output

voltage values that vary according to a change in a gap between the hall effect sensors (35-38) and the magnet such that the voltage values indicate a set of X, Y coordinates in a two dimensional space (*see* figures 11a-11c, 12, 14 at 66-69; column 9, line 15 through column 10, line 66).

Regarding **claims 2, 5, 8**, in further discussion of claim 1, 4, 7, Houston teaches a holder by teaching a spherical lid 30 in the form of cupola 30 that is fixedly mounted with respect to the cylindrical magnet by soldering and having a curved interior surface symmetrically disposed with respect to the common center axes of the cylindrical and annular magnets and surrounding both of the cylindrical and annular magnet (column 6, lines 67 through column 7, lines 1-5, figure 7 at 30).

Furthermore, Houston teaches how the lower edges of the cupola 30 slightly abut the periphery of the lower magnet 22 without being attached thereto and can therefore rotate freely about its center wherein the centers 31 of the spacer 23 and of the cupola 30 are coincident (column 7, lines 1-5).

Furthermore, Houston teaches how the cylindrical and annular magnets would produce a force of repulsion therebetween, engaging the mating, outer curved surface of the slide support with the inner curved surface of the holder in a sliding relative relationship therebetween to afford rotation of the holder relatively to the slide suppod and corresponding tilting of the annular magnet with respect to the magnetoelectric transducers (column 7, lines 13-16, figures 21, 22, 28).

Regarding **claims 3, 6, 9**, in further discussion of claim 1, 4, 9, Houston teaches how the cylindrical magnet is a substantially solid, cylindrical structure having parallel opposite ends perpendicular to the center axis thereof (see figure 7 at 21).

Regarding **claim 11**, in further discussion of claim 10, Houston teaches a holder by teaching a spherical lid 30 in the form of cupola 30 that is fixedly mounted with respect to the cylindrical magnet by soldering and having a curved interior surface symmetrically disposed with respect to the common center axes of the cylindrical and annular magnets and surrounding both of the cylindrical and annular magnet (column 6, lines 67 through column 7, lines 1-5, figure 7 at 30).

Furthermore, Houston teaches how the lower edges of the cupola 30 slightly abut the periphery of the lower magnet 22 without being attached thereto and can therefore rotate freely about its center wherein the centers 31 of the spacer 23 and of the cupola 30 are coincident (column 7, lines 1-5).

The embodiment shown in figure 9 teaches a <u>cylindrical magnet 48</u> having a center axis, and an <u>annular magnet 49</u> having a center axis in common with the center axis of the cylindrical magnet 21 wherein the inner circumference of magnet 49 is larger than the outer circumference of the cylindrical magnet 48 (see figure 9 at 48, 49).

Thus, it would have been obvious to a person of ordinary skill in the art to modify the shapes of the magnets (21, 22) in order to be cylindrical or annular. The motivation for adjusting the shape would have been to facilitate improved ergonomic characteristics in a magnetic tactile sensor (column 4, lines 19-23).

Furthermore, Houston teaches how the cylindrical and annular magnets would produce a force of repulsion therebetween, engaging the mating, outer curved surface of the slide support with the inner curved surface of the holder in a sliding relative relationship therebetween to afford rotation of the holder relatively to the slide suppod and corresponding tilting of the annular magnet with respect to the magnetoelectric transducers (column 7, lines 13-16, figures 7 at 21, 22, 28).

Regarding **claim 12**, in further discussion of claim 10, Houston teaches how the cylindrical magnet is a substantially solid, cylindrical structure having parallel opposite ends perpendicular to the center axis thereof (see figure 7 at 21).

Regarding **claims 13** and **14**, in further discussion of claim 10, Houston teaches a holder by teaching a spherical lid 30 in the form of cupola 30 that is fixedly mounted with respect to the cylindrical magnet by soldering and having a curved interior surface symmetrically disposed with respect to the common center axes of the cylindrical and annular magnets and surrounding both of the cylindrical and annular magnet (column 6, lines 67 through column 7, lines 1-5, figure 7, 9b at 30, 48, 49).

Regarding **claims 15-17**, in further discussion of claim 10, Houston teaches a first magnet 21 and a second magnet 22, and a plurality of magnetoelectric hall effect sensors (35-38) disposed in a plane transverse to the common axes of the first magnet 21 and second magnet 22 wherein the center axis of the first magnet 21 coincides with the center axis of the second magnet

22 (see figure 7 at 21 & 22). The embodiment shown in figure 9 teaches a cylindrical magnet 48 having a center axis, and an annular magnet 49 having a center axis in common with the center axis of the cylindrical magnet 21 wherein the inner circumference of magnet 49 is larger than the outer circumference of the cylindrical magnet 48 (see figure 9 at 48, 49).

Thus, it would have been obvious to a person of ordinary skill in the art to modify the shapes of the magnets (21, 22) in order to be cylindrical or annular. The motivation for adjusting the shape would have been to facilitate improved ergonomic characteristics in a magnetic tactile sensor (column 4, lines 19-23).

Also, Houston teaches how the magnetoelectric transducers are disposed symmetrically about the common central axis and radially inwardly of the inner diameters of the first and second magnets (see figure 8).

Regarding **claim 18**, in further discussion of claim 10, Houston teaches a first magnet 21 and a second magnet 22, and a plurality of magnetoelectric hall effect sensors (35-38) disposed in a plane transverse to the common axes of the first magnet 21 and second magnet 22 wherein the center axis of the first magnet 21 coincides with the center axis of the second magnet 22 (see figure 7 at 21 & 22). The embodiment shown in figure 9 teaches a cylindrical magnet 48 having a center axis, and an annular magnet 49 having a center axis in common with the center axis of the cylindrical magnet 21 wherein the inner circumference of magnet 49 is larger than the outer circumference of the cylindrical magnet 48 (see figure 9 at 48, 49).

Thus, it would have been obvious to a person of ordinary skill in the art to modify the shapes of the magnets (21, 22) in order to be cylindrical or annular. The motivation for adjusting

the shape would have been to facilitate improved ergonomic characteristics in a magnetic tactile sensor (column 4, lines 19-23).

Regarding **claims 19-22**, in further discussion of claim 16, Houston teaches an invention that relates to position sensors and more particularly to magnetic tactile sensors used in pointing devices for computer workstations (column 1, lines 5-10) in a three dimensional environment (column 7, lines 20-23).

Furthermore, Houston teaches how the magnets are disposed with respect to one another such that two sides 32 33 facing each other have the same polarity wherein the polarity of the upper side 34 of the top magnet 21 (north in the case of FIG. 7) determines the arrangement of the other magnets, namely reverse polarities for the intermediary magnet 22 and same polarity disposition as the upper magnet for the lower magnet 28 (column 7, lines 6-13, figure 7 at 21, 32-34). Also, Houston discloses that by virtue of Gauss's law, the like poles of two magnets repel each other such that the three magnets 21, 22 and 28 represented in FIG. 7 are therefore mutually repelling one another (column 7, lines 13-16, figures 21, 22, 28).

Response to Arguments

6. Applicant's Remarks and arguments filed April 14, 2004 have been fully considered but they are not persuasive.

Applicants contends that the magnetic sensors in the Houston reference are not positioned within a space defined between respective poles of two magnets but, instead, are positioned in the vicinity of, but outside, a space between respective spaced poles of the respective magnets, as

seen in the various different embodiments in Figs. 7 to 18. In response to these applicant's arguments that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the magnetic sensors are not positioned within a space defined between respective poles of two magnets but, instead, are positioned in the vicinity of, but outside, a space between respective spaced poles of the respective magnets) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Furthermore, applicant contends that with regard to the embodiments of Figs. 7 and 9 of applicants invention, the opposing magnets 12a and 14a are disposed in alignment along a common central axis and the magnetic sensors 16a and 16c (sensors 16b and 16d not shown in Fig. 7) are disposed on a supporting circuit board 18, at a radius greater than the radius of the magnets, measured from the common central axis. This feature, however, is taught in Houston. Specifically, the embodiment shown in figure 9 of Houston teaches a <u>cylindrical magnet 48</u> having a center axis, and an <u>annular magnet 49</u> having a center axis in common with the center axis of the cylindrical magnet 21 wherein the inner circumference of magnet 49 is larger than the outer circumference of the cylindrical magnet 48 (see figure 9 at 48, 49). Thus, it would have been obvious to a person of ordinary skill in the art to modify the shapes of the magnets (21, 22) in order to be cylindrical or annular. The motivation for adjusting the shape would have been to facilitate improved ergonomic characteristics in a magnetic tactile sensor (column 4, lines 19-23).

Also, applicant alludes that his invention is in contrast with the Houston reference because the Hall effect sensors 35-38 (see Figs. 7 and 8) are positioned on the surface of the intermediate magnet 22 and thus between the opposing pole surfaces of the upper magnet 21 and the intermediate magnet 22, thereby requiring a greater separation, or gap, between same relatively to the reduced gap afforded by the structure of the present invention. Applicant points to the aspect of his invention wherein the magnetic sensors are disposed so as to have respective lines of magnetic flux in opposing relationship, and accordingly, the two magnets can be positioned closely to each other in a direction parallel to a common axis of the magnets, with only a small gap or displacement along that common axis therebetween, a reduction in the height of the coordinates input apparatus is thereby achieved (see Applicant's Remarks on page 3, 1st Paragraph). However, this feature as eloquently elaborated by applicant is not recited in the claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Furthermore, Applicant distinguishes his invention from Houston by arguing that applicant's structure has spacer elements and relies on forces of repulsion and not attraction. On this issue, applicant should note that Houston teaches how magnets (21, 22) are disposed having identical poles opposite each other (figure 1-8, at 21, 22, 30, 35-38) wherein the facing magnet surfaces have the same polarity, repelling each other (see Abstract). As such, Houston does teach the repelling feature of Applicant.

Also, applicant points to the dimensional relationship between the annular magnet and the cylindrical magnet as important, since it permits arranging the two magnets close to each

other, thereby to reduce a gap formed therebetween (see page 4 of Applicant's Remarks). However, this aspect is clearly taught in Houston. The embodiment shown in figure 9 teaches a cylindrical magnet 48 having a center axis, and an annular magnet 49 having a center axis in common with the center axis of the cylindrical magnet 21 wherein the inner circumference of magnet 49 is larger than the outer circumference of the cylindrical magnet 48 (see figure 9 at 48, 49).

Applicant further contends that Houston is silent regarding the limitation that "a plurality of magnetoelectric transducers are displaced radially from the pole of at least one of the first and second magnets." Contrary to applicant's argument, this limitation is disclosed in the Houston reference in Fig. 8 wherein the sensors are disposed in a fashion that reads on this limitation.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Uchendu O. Anyaso whose telephone number is (703) 306-5934. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras, can be reached at (703) 305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Uchendu O. Anyaso

08/20/2004

CHANH NGUYEN
PRIMARY EXAMINER